Entry Procedures and Timelines

DR. MULQUEEN: Thank you.

After all of this morning's briefings, I am sure all of you are terribly excited to get started and you are really looking forward to entering this contest. So I would like to tell you what you need to do to actually go about participating in this event.

Let me just put up the timeline. You should be somewhat familiar with this by now. On April 1st, we are going to post the rules to the website, and at that point, we will also open the application period, which means you will be able to find the application forms and directions on how to submit them on the website at that point.

The application period closes on 13 October, and the reason there is such a long time in between when the application period opens and when it closes is we expect this to be a dialogue between DARPA and yourself. So you can submit an application early on. We encourage you to submit the application as early as possible.

If we can't accept your application for whatever reason, we will tell you why that is. The reason we are having such a long period is we anticipate that some of these

1 rules are intentionally left fairly open, so you can kind of

2 do whatever you want within certain boundaries, and I suspect

3 knowing some of you, you will try to push those boundaries as

4 far as you can. So we will help you find where those

5 boundaries are.

6   You might submit an idea, and we are going to tell

7 you no, that is not acceptable for these reasons, and you can

8 resubmit that idea. You have up until 13 October to keep

9 resubmitting it. So you are encouraged to start as early as

10 possible.

11   Getting closer to the event, there is going to be

12 this kickoff ceremonial start at the DARPATech meeting.

13 There is not going to be really any autonomous test for your

14 vehicle at that point. The real contest starts on 12 March,

15 which is the day before the main event, and that is going to

16 be a qualification inspection and demonstration. I will go

17 over that in more detail in a minute. Finally, the event

18 itself on 13 March.

19   So the application process is going to have three

20 parts. There is going to be an administrative application,

21 there is going to be a technical paper, and then there is

22 going to be an application addendum, which is going to

1 include last-minute items. I will go over all of those right

2 now.

3   The administration application is going to be very

4 straightforward. It is going to have things like your name,

5 if you are sponsored, who your sponsor is. You are going to

6 be required to show that you have insurance, and you are

7 going to be required to sign some agreements. Again, all of

8 this is in more detail in your packet that you received this

9 morning, and it will also be on the website in much more

10 detail. I suspect this will be fairly straightforward.

11   The part where you may have a few questions is on

12 the technical paper. The reasons for having the technical

13 paper, there are three primary reasons. One is to ensure

14 that you comply with all of the Grand Challenge rules. As I

15 have said, the rules are intentionally left fairly open, and

16 we are going to allow you to be as creative as you want, but

17 there are certain -- I will give you an example.

18   We are not telling you what kind of power source

19 you can use or what kind of fuel you can use, but if you

20 propose to use 50 tons of TNT as your power source, we are

21 going to write back and say, "Well, that violates Rule No. 1,

22 which is the thing has to be safe." So you can write back

and say, "Okay. I am going to use diesel instead." SO now

you have time. You can get all that worked out. We don't

want you showing up to the main event itself with a truckload

of TNT and then having to turn you away. This should help

you, and we encourage you to use this process.

We are also going to look at the feasibility of the

proposed design. For efficient operation of the race, we

need to make sure we don't have a lot of entries that are

just completely incapable of doing anything, and they are

just going to clutter up the course. So we are going to

actually look at your paper. We are going to question

whether or not we think this has any realistic shot. We are

going to be fairly generous. This isn't a typical DARPA

proposal where you have to really prove that you have the

correct solution. This is just to make sure you are at least

not way out in left field and you are just going to muck up

the whole event.

Finally, the overriding concern through all of this

is safety. So we are going to use the technical paper as a

measurement of the safety of the vehicle.

As I have already mentioned, you can start

submitting the technical paper when the application period

1 opens, and you can keep resubmitting papers that have been

2 turned away for whatever reason up until 13 October.

3 The other thing to point out about this technical

4 paper is that the purpose of the Grand Challenge is to

5 stimulate technical development in this area. So one of the

6 ways we are going to do that is we are going to publish the

7 papers after the end of the Grand Challenge. After the

8 event, it is not such a secret to keep your idea secret, and

9 we are hoping that if you have really found the right

10 combination, this would be kind of like an academic

11 publication where you would want to share that with the rest

12 of the world. So you want to keep that in mind as you are

13 writing the papers as well.

14 I will go over very briefly what the content of the

15 paper is. You have this in your packet as well, and it will

16 be on the website in more detail. I just want to give you an

17 idea of what we are looking for.

18 First of all, there is a 10-page limit to the

19 paper, and we would expect most of you would come pretty

20 close to that limit. If you have a fairly straightforward

21 design, you may be able to do it in less than 10 pages. That

22 would be fine, as long as the design really is

1 straightforward. If you submit one paragraph as your

2 technical paper, it is probably not going to be accepted and

3 you will, of course, have to resubmit it. So that is the

4 kind of detail we are looking for.

5   We are going to ask you to describe your system in

6 that level of detail, and we are going to ask you to describe

7 all of the various aspects of your system, the mobility, what

8 your power source is, how you are going to do the processing,

9 both software and hardware, what kind of sensors you are

10 going to use, and what kind of communication devices you are

11 going to have. For that, I am particularly talking about the

12 E-stop. We are going to actually make sure that two people

13 aren't on the same channel for their E-stop. We will do the

14 deconfliction this way.

15   We are also going to ask you about any performance

16 tests that you either have done or are planning to do, and

17 this will give us an idea of what the feasibility of your

18 study is.

19   Again, safety is an overriding concern, and

20 environmental is an overriding concern. We have left the

21 rules very broad on what you can do, but we want to make sure

22 that you are not going to do something incredibly dangerous.

1   So we are going to ask you things like what the top speed

2 is. There is no limit on what your top speed is, but if you

3 have a very fast vehicle, we might look at certain issues a

4 little differently than if you had a very slow vehicle. We

5 will ask you what the size and weight are. If you have a

6 very heavy vehicle, that might change what you can do.

7   Also, we have a category we are calling

8 electromagnetic radiators. So we are including anything

9 about laser, radar, anything like that. We are going to want

10 to know things like power output and what frequency you are

11 operating at. Again, that is mostly for safety.

12   We are also going to ask you about any safety

13 equipment, things like fire extinguishers, what you are

14 planning on having onboard, making sure you comply with all

15 the rules.

16   We will then ask you how the E-stop is going to

17 work, and we want a detailed description to make sure that

18 when the operator in the safety vehicle hits that E-stop, we

19 really need to be sure it is going to stop. So we are going

20 to ask you how you plan on doing that.

21   Finally, you also need to describe your safety

22 vehicle. Again, we are looking to see that you have complied

1 with all the rules. As Mike Fagan mentioned, the safety

2 vehicle must comply to the SCORE International safety

3 standards. So we are going to ask you what kind of seat

4 belts and first aid kit and fire extinguishers, all of those

5 things that are required by SCORE. We are going to make sure

6 that you are aware of that at this point.

7   The last piece is going to be an application

8 addendum. So this is basically for last-minute items. We

9 are going to take all the teams that have submitted

10 applications, and at some point leading up to the race, we

11 may write back to you and ask for additional material. The

12 primary purpose of this is to give you a chance to make

13 updates that you might need to do at the last minute.

14   For example, if you add a team member after 13

15 October, you could just send us the application addendum

16 saying we have this new team roster. We might also put out a

17 program at the event, so we might like a photograph of your

18 vehicle, or if you had your entire team standing around the

19 vehicle and you wanted a picture to go in that. Obviously

20 you are not going to be ready for that until right before the

21 race. So we are going to ask for it at the last minute.

22 Again, this should be fairly straightforward.

1   Finally, once you have submitted all of the

2 application material, once your technical paper has been

3 judged and accepted, the last thing you need to do in order

4 to compete in the main event is going to be this

5 qualification and inspection period. This is going to be the

6 day before the main event at the California Motor Speedway.

7   The first thing that we are going to do is inspect

8 the vehicles, and what we are looking for here is that you

9 comply with all of the Grand Challenge rules and that you

10 have complied with the technical paper. I want to emphasize

11 that you must do what you said you are going to do in the

12 technical paper. We are going to be looking at all of the

13 equipment that you said you are going to have, and we are

14 going to make sure you actually have it, but we are also

15 going to look for any equipment on the vehicle that isn't in

16 the technical paper. Of course, that won't be allowed, and,

17 of course, we are specifically looking for people who might

18 be trying to cheat and get around it by doing something that

19 they never told us about.

20   Once you pass the inspection, you will then have to

21 do a small qualification event. This will be something that

22 will be fairly easy for your vehicles to do. Any vehicle

1 that would be capable of doing the full course will have no

2 problem doing this, this short qualification. It is going to

3 be a short course defined by way points and boundaries, just

4 like the main event is going to be.

5 We may have some small obstacles there, but nothing

6 terribly challenging, and we are just going to make sure that

7 your vehicle actually can move and operate at a reasonably

8 intelligent manner. This is, again, just for the efficient

9 operation of our event. We don't want you showing up to the

10 main event with something that can't move and completely

11 mucking up the course.

12 There will also be a mandatory demonstration of the

13 E-stop. So we are going to have vehicles come up to speed,

14 have the operator engage the E-stop, and everything must

15 stop.

16 So once you pass the qualification and the

17 inspection criteria, you are ready to head to the main event,

18 and then hopefully we will see you in Las Vegas 6 or 10 hours

19 later.

20 Thanks.